

## CLAIMS

1. A method for transmitting a bit stream by using at least first and second antennas comprising:
  - dividing said bit stream at least into a first sub stream and a
  - 5 second sub stream;
  - dividing each of said sub streams into at least first and second segments;
  - dividing each of said segment into a plurality of fragments;
  - processing said plurality of fragments in one segment from said
  - 10 first sub stream;
  - processing said plurality of fragments in one segment from said second sub stream;
  - applying the processed fragments in said first sub stream to said first antenna; and
  - 15 applying the processed fragments in said second sub stream to said second antenna.
2. A method as claimed in claim 1, wherein said processing is a spatial multiplexing coding.
3. A method as claimed in claim 1, wherein said processing is a
- 20 space time block coding.
4. A method as claimed in claim 1, wherein said processing is a space frequency block coding.
5. A method as claimed in claim 2, wherein said processing comprises transforming the fragment to a transmission signal to be
- 25 carried in a first predetermined frequency.
6. A method as claimed in claim 3, wherein said processing comprises transforming a portion of the fragment to a transmission signal to be carried in a first predetermined frequency, and a

remaining portion of the fragment to a transmission signal to be carried in said first predetermined frequency.

7. A method as claimed in claim 4, wherein said processing comprises transforming the fragment to a transmission signal to be carried in a first predetermined frequency, and the same fragment to a transmission signal to be carried in a second predetermined frequency.

8. A method as claimed in claim 1, wherein said processing comprises:

transforming the fragment to transmission signal;  
distributing the transmission signal; and  
IFFT processing the transmission signal.

9. An apparatus for transmitting a bit stream by using at least first and second antennas comprising:

means for dividing said bit stream at least into a first sub stream and a second sub stream;

means for dividing each of said sub streams into at least first and second segments;

means for dividing each of said segment into a plurality of fragments;

means for processing said plurality of fragments in one segment from said first sub stream;

means for processing said plurality of fragments in one segment from said second sub stream;

means for applying the processed fragments in said first sub stream to said first antenna; and

means for applying the processed fragments in said second sub stream to said second antenna.

10. An apparatus as claimed in claim 9, wherein said processing

means carries out a spatial multiplexing coding.

11. An apparatus as claimed in claim 9, wherein said processing means carries out a space time block coding.

5 12. An apparatus as claimed in claim 9, wherein said processing means carries out a space frequency block coding.

13. An apparatus as claimed in claim 10, wherein said processing means comprises a transformer for transforming the fragment to a transmission signal to be carried in a first predetermined frequency.

10 14. An apparatus as claimed in claim 11, wherein said processing means comprises a first transformer for transforming a portion of the fragment to a transmission signal to be carried in a first predetermined frequency, and a second transformer for transforming a remaining portion of the fragment to a transmission signal to be carried in said first predetermined frequency.

15 15. An apparatus as claimed in claim 12, wherein said processing means comprises a first transformer for transforming the fragment to a transmission signal to be carried in a first predetermined frequency, and a second transformer for transforming the same fragment to a transmission signal to be carried in a second predetermined frequency.

20 16. An apparatus as claimed in claim 9, wherein said processing means comprises:

means for transforming the fragment to transmission signal;

means for distributing the transmission signal; and

means for IFFT processing the transmission signal.

25 17. In a system for transmitting a bit stream from a first station to a second station using at least first and second transmitting antennas provided in the first station and at least first and second receiving antennas provided in the second station, with a coordinator providing

control signal having a poll frame for controlling the time duration for the transmission, said poll frame comprising:

a transmitter ID for specifying said first station;

an antenna index for specifying each of said first and second  
5 transmitting antennas in said first station; and

a frequency set ID for specifying a carrier frequency of a transmission signal from each of said first and second transmitting antennas in said first station.

18. In a system for transmitting a bit stream from a first station to a  
10 second station using at least first and second transmitting antennas provided in the first station and at least first and second receiving antennas provided in the second station, said bit stream comprising:

a frequency set indicating at least one of a space time block coding mode or a space frequency block coding mode, and

15 a training sequence for training the transmission using at least two transmitting antennas and at least two receiving antennas.